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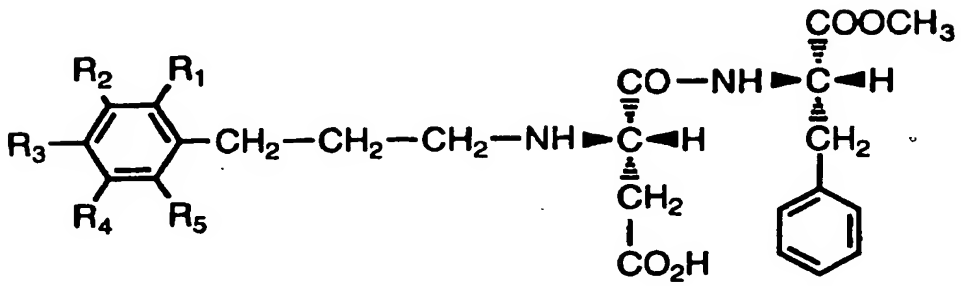
WHAT IS CLAIMED IS:

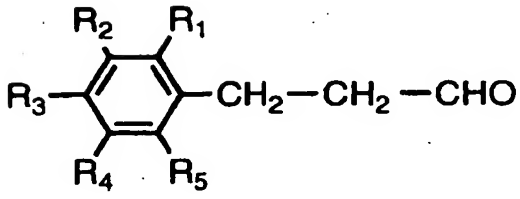
1. A process for producing a compound of formula (3)



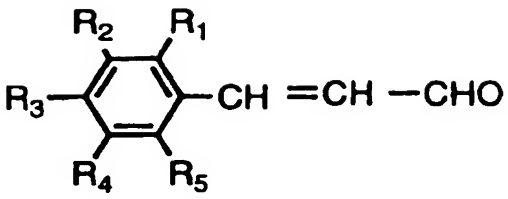
(3)

wherein in formula (3) R_1, R_2, R_3, R_4 and R_5 are independently selected from the group consisting of a hydrogen atom, a hydroxyl group, an alkoxy group having 1 to 3 carbon atoms, an alkyl group having 1 to 3 carbon atoms, and a hydroxyalkyloxy group having 2 or 3 carbon atoms, which comprises:

reductively alkylating an aspartame with an aldehyde represented by the formula (1) or the formula (2), and hydrogen in the presence of catalyst:



(1)



(2)

wherein in the aldehydes of formula (1) and (2), R_1, R_2, R_3, R_4 and R_5 are independently selected from the group consisting of a hydrogen atom, a hydroxyl group, an alkoxy group having 1 to 3 carbon atoms, an alkyl group having 1 to 3 carbon atoms, a benzyloxy group and a hydroxyalkyloxy group having 2 or 3 carbon atoms.

2. The process as defined in claim 1, wherein R_1 and R_2 or R_2 and R_3 together form a methylenedioxy group.

3. The process as defined in claim 1, wherein R_2 is a hydroxyl group, R_3 is a methoxy group, and R_1, R_4 and R_5 are hydrogen atoms.

4. The process of Claim 3, wherein in formulas (1) and (2) R_2 is a benzyloxy group.

5. The process as defined in claim 1, wherein R_2 is a methyl group, R_3 is a hydroxyl group, and R_1, R_4 and R_5 are hydrogen atoms.

6. The process as defined in claim 1, wherein in formulas (1) and (2) R_3 is a benzyloxy group.

7. The process as defined in claim 1, wherein R_2 and R_3 together form a methylenedioxy group, and R_1, R_4 and R_5 are hydrogen atoms.

8. The process as defined in claim 1, wherein R_1 is a hydroxyl group, R_3 is a

methoxy group, and R_2, R_4 and R_5 are hydrogen atoms.

9. The process as defined in claim 8, wherein in formulas (1) and (2) R_1 is a benzyloxy group.

10. The process as defined in claim 1, wherein R_3 is a hydroxyl group, and R_1, R_2, R_4 and R_5 are hydrogen atoms.

11. The process as defined in claim 10, wherein in formulas (1) and (2) R_3 is a benzyloxy group.

12. The process as defined in claim 1, wherein R_2 is a hydroxyl group, R_3 is a methyl group, and R_1, R_4 and R_5 are hydrogen atoms.

13. The process as defined in claim 1, wherein in formulas (1) and (2) R_2 is a benzyloxy group.

14. The process as defined in claim 1, wherein R_1 and R_3 are a hydroxyl group, and R_2, R_4 and R_5 are hydrogen atoms.

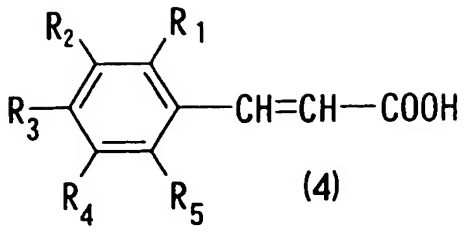
15. The process as defined in claim 14, wherein in formulas (1) and (2) R_1 and R_3 are benzyloxy groups.

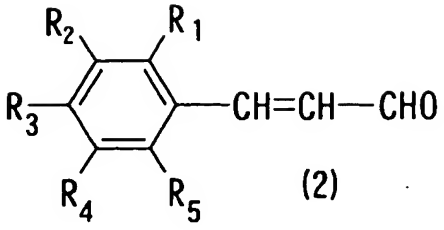
16. The process as defined in claim 14, wherein in formulas (1) and (2) R_1 and R_3 is a benzyloxy group.

17. The process as defined in claim 1, wherein said catalyst is at least one of palladium carbon or platinum carbon.

18. The process as defined in claim 1, wherein said reductive alkylating is performed in a solvent, which is methanol or water and methanol mixture.

19. A process for producing a compound of formula (2), which comprises converting a carboxyl group in a compound of formula (4) into a formyl group



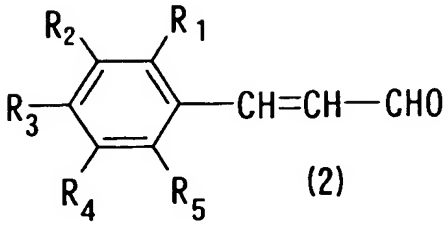


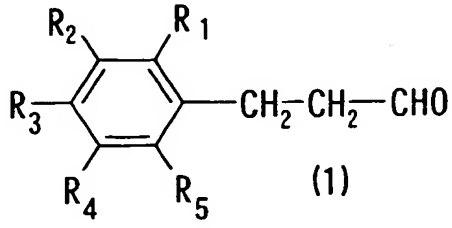
wherein, R_1, R_2, R_3, R_4 and R_5 are independently selected from the group consisting of a hydrogen atom, a hydroxyl group, an alkoxy group having 1 to 3 carbon atoms, an alkyl group having 1 to 3 carbon atoms, and a hydroxyalkyloxy group having 2 or 3 carbon atoms.

20. The process as defined in claim 19, wherein R_1 and R_2, or R_2 and R_3 form a methylenedioxy group.

21. The process as defined in claim 19, wherein R_2 is a hydroxyl group, R_3 is a methoxy group, and R_1, R_4 and R_5 are a hydrogen atom

22. A process for producing a compound of formula (1), which comprises selectively reducing a carbon-carbon double bond in a compound of the formula (2),





wherein R_1, R_2, R_3, R_4 and R_5 are independently selected from the group consisting of a hydrogen atom, a hydroxyl group, an alkoxy group having 1 to 3 carbon atoms, an alkyl group having 1 to 3 carbon atoms, and a

hydroxyalkyloxy group having 2 or 3 carbon atoms.

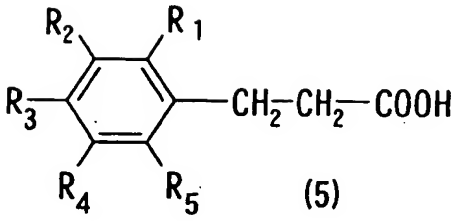
23. The process as defined in claim 22, wherein R_1 and R_2, or R_2 and R_3 form a methylenedioxy group.

24. The process as defined in claim 22, wherein R_2 is a hydroxyl group, R_3 is a methoxy group, and R_1, R_4 and R_5 are hydrogen atoms

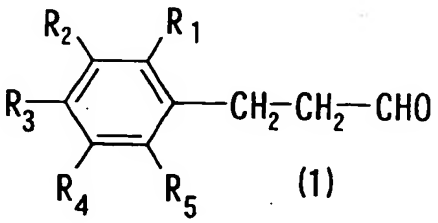
25. The process as defined in claim 22, wherein said selectively reducing is conducted in the presence of a hydrogenation catalyst.

26. The process as defined in claim 22, wherein said selectively reducing is conducted in the presence of at least one of a palladium catalyst, platinum catalyst, and rhodium catalyst.

27. A process for producing a compound of formula (1), which comprises:



(5)



(1)

converting a carboxyl group in a compound of formula (5) into a formyl group,

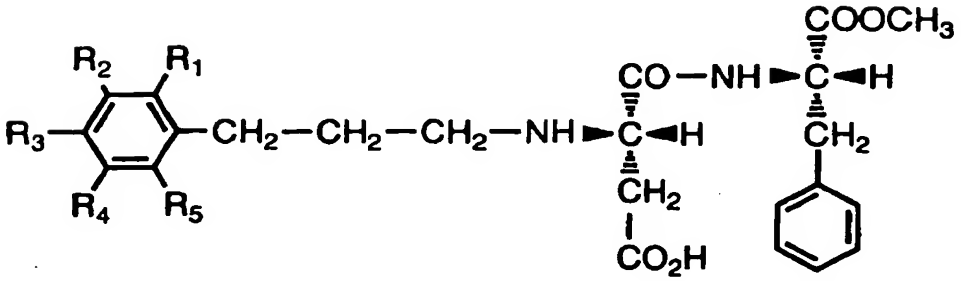
wherein R_1, R_2, R_3, R_4 and R_5 are independently selected from the group consisting of a hydrogen atom, a hydroxyl group, an alkoxy group having 1 to 3 carbon atoms, an alkyl group having 1 to 3 carbon atoms, and a hydroxyalkyloxy group having 2 or 3 carbon atoms.

28. The process as defined in claim 27, wherein R_1 and R_2, or R_2 and R_3 form a

methylenedioxy group.

29. The process as defined in claim 28, wherein R_2 is a hydroxyl group, R_3 is a methoxy group, and R_1, R_4 and R_5 are hydrogen atoms.

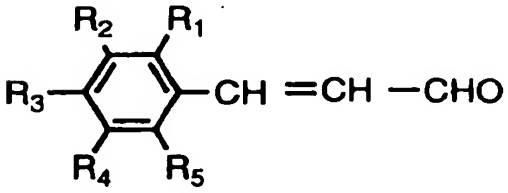
30. A process for producing a compound of formula (3)



(3)

which comprises:

reductively alkylating an aspartame with a compound of formula (2) obtained by the



(2)

process as defined in claim 19 in the presence of hydrogen and a catalyst,

wherein R_1, R_2, R_3, R_4 and R_5 are independently selected from the group consisting of a hydrogen atom, a hydroxyl group, an alkoxy group having 1 to 3 carbon atoms,

an alkyl group having 1 to 3 carbon atoms, and a hydroxyalkyloxy group having 2 or 3 carbon atoms.

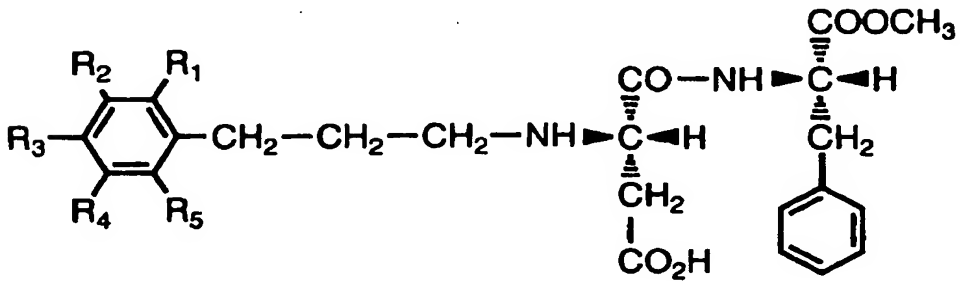
31. The process as defined in Claim 30, wherein R_1 and R_2, or R_2 and R_3 may be form a methylenedioxy group.

32. The process as defined in claim 30, wherein R_2 is a hydroxyl group, R_3 is a methoxy group, and R_1, R_4 and R_5 are hydrogen atoms.

33. The process as defined in claim 30, wherein said catalyst is at least one of palladium carbon or platinum carbon.

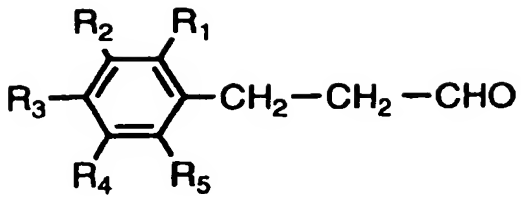
34. The process as defined in claim 30, wherein said reductive alkylating is performed in a solvent, which is methanol or water and methanol mixture.

35. A process for producing compound of formula (3)



(3)

which comprises reductively alkylating an aspartame with a compound of formula (1) obtained by the process as defined in claim 23 in the presence of hydrogen and a catalyst,



(1)

wherein R_1, R_2, R_3, R_4 and R_5 are independently selected from the group consisting of a hydrogen atom, a hydroxyl group, an alkoxy group having 1 to 3 carbon atoms, an alkyl group having 1 to 3 carbon atoms, and a hydroxyalkyloxy group having 2 or 3 carbon atoms.

36. The process as defined in claim 35, wherein R_1 and R_2 or R_2 and R_3 form a methylenedioxy group.

37. The process as defined in claim 35, wherein R_2 is a hydroxyl group, R_3 is a methoxy group, and R_1, R_4 and R_5 are hydrogen atoms.

38. The process as defined in claim 35, wherein said catalyst is at least one of palladium carbon or platinum carbon.

39. The process as defined in claim 35, wherein said reductive alkylating is performed in a solvent, which is methanol or water and methanol mixture

40. A process for producing a 3-(3-hydroxy-4-methoxyphenyl) propionaldehyde, which comprises: selectively reducing a carbon-carbon double bond of 3-hydoroxy-4-methoxycinnamaldehyde; or converting a carboxyl group of 3-(3-hydoroxy-4-methoxyphenyl)propionic acid into a formyl group.

41. The process as defined in claim 40, which comprises converting a carboxyl group of

3-(3-hydoroxy-4-methoxyphenyl)propionic into a formyl group.

42. The process as defined in claim 40, which comprises selectively reducing a carbon-carbon double bond of 3-hydoroxy-4-methoxycinnamaldehyde.

43. The process as defined in claim 40, wherein said selectively reducing is conducted in the presence of a hydrogenation catalyst.

44. The process as defined in claim 43, wherein said catalyst is at least one of palladium catalyst, platinum catalyst, and rhodium catalyst.

45. The process as defined in claim 41, wherein said 3-(3-hydoroxy-4-methoxyphenyl)propionic acid is obtained by selectively reducing a carbon-carbon double bond of 3-hydoroxy-4-methoxycinnamic acid.

46. The process as defined in claim 45, wherein said selectively reducing is conducted in the presence of a hydrogenation catalyst.

47. The process as defined in claim 46, wherein said catalyst is at least one of palladium catalyst, platinum catalyst, and rhodium catalyst.

48. A process for producing a N-[N-[3-(3-hydroxy-4-methoxyphenyl) propyl]-L- α -aspartyl]-L-phenylalanine 1-methyl ester, which comprises reductively alkylating 3-(3-hydroxy-4-methoxyphenyl) propionaldehyde with an aspartame.

49. 3-(3-hydroxy-4-methoxyphenyl) propionaldehyde.